

REMARKS

Claims 1-8, 19, 20, 31, 34 and 37-41 are pending in the present application. Claims 9-18, 21-30, 32, 33, 35 and 36 have been canceled by a previous amendment. Claims 1, 19, 20, 39 and 41 are independent. Reconsideration of this application, in view of the following remarks, is respectfully requested.

Interview with Examiner

An interview was conducted with the Examiner in charge of the above-identified application on August 2, 2005. Applicant's representative appreciates the courtesy shown by the Examiner during the interview.

In the interview with the Examiner, the references of record were discussed. Specifically, it was argued that there is an insufficient teaching to modify the Huang et al. reference in view of the Ciardella et al. reference as proposed by the Examiner. In addition, it was explained that the Madeira, Chabert et al. and Skinner et al. references are non-analogous prior art. Finally, it was argued that the Skinner et al. reference is insufficient to modify the Huang et al. reference as proposed by the Examiner.

As mentioned in the Interview Summary dated August 2, 2005, the Examiner was convinced by the arguments presented during the interview, and the rejections of record will be withdrawn if a formal response is filed explaining the above arguments in detail. As the Examiner will note, the below comments set forth the arguments presented to the Examiner during the interview. In view of this, it is believed that the Examiner's rejections should be withdrawn.

Rejections Under 35 U.S.C. §103

Claims 1-5, 7, 8, 19, 20, 31, 34 and 37-41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang et al., U.S. Patent No. 6,100,787 in view of Ciardella et al., U.S. Patent No. 5,711,989, in further view of Chabert et al., U.S. Patent No. 4,660,771 and Madeira, U.S. Patent No. 3,738,760. Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang et al. in view of Ciardella et al., Chabert et al. and Madeira, as applied to claims 2 or 3 above, and further in view of Itsuji, U.S. Patent No. 5,151,299. Claims 1-5, 7, 8, 19, 20, 31, 34 and 37-41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang et al. in view of Skinner et al., U.S. Patent No. 6,7613,240. These rejections are respectfully traversed.

The present invention is directed to a method of applying viscous medium onto a substrate. Independent claim 1 recites a combination of steps including “add-on jetting of predetermined additional amounts of viscous medium on predetermined positions on the screen printed substrate, said add-on jetting being performed without masking or stenciling.” Independent claims 19, 20, 39 and 41 of the present invention are also directed to a method of applying viscous medium on a substrate. Independent claims 19 and 20 recite the step of “jetting additional viscous medium onto the substrate, said add-on jetting being performed without masking or stenciling.” Independent claim 39 of the present invention recites the step of “add-on jetting of individual droplets of viscous medium one drop at a time on predetermined positions on the screen printed substrate.” Independent claim 41 recites the step of “add-on jetting of solder paste on predetermined positions on the screen printed substrate.” Applicants respectfully submit that the references relied on by the Examiner fail to teach or suggest the presently claimed invention.

With regard to the Huang et al. reference relied on by the Examiner, this reference is directed to a multilayer ceramic package with low-variance embedded resistors. Referring to column 1, lines 11-31 of Huang et al., as mentioned by the Examiner, this reference does disclose that screen printing resistive paste can result in uneven applications of the resistive paste. However, the Examiner also states that Huang et al. “fails to explicitly teach smoothing these coatings” (emphasis added). Applicants submit that there is absolutely no suggestion in the Huang et al. reference, either explicitly or implicitly, that the uneven application of the resistive paste be corrected by “smoothing” the resistive paste as appears to be the position of the Examiner. In Huang et al., the problem of uneven application is not addressed by smoothing the resistive paste, but by completely re-designing the multilayer ceramic package. Specifically, in Huang et al., the problem of uneven application of the resistive paste is addressed by forming troughs 220 in the sheets 206 and 210 that are filled with the resistive paste during the screen printing process (see column 3, lines 14-16 of Huang et al.). Since the inclusion of the troughs results in a thicker layer of resistive paste, the variation in the application of the resistive paste has less of an effect on the resistance of the embedded resistor. In view of this, Huang et al. solves the problem of uneven application of the resistive paste by making the thickness greater, not by eliminating or smoothing out the unevenness.

Nevertheless, the Examiner relies on the Ciardella et al. reference in order to modify Huang et al. to smooth the coatings. However, as mentioned above, Applicants submit that Huang et al. fails to recognize smoothing the resistive paste to correct the problem of uneven coatings. In other words, Huang et al. recognizes the problem, but there is no suggestion that the solution to this problem would be to smooth the resistive paste, and more importantly, to smooth the resistive paste

through add-on jetting of additional viscous medium as in the presently claimed invention. In addition, the Ciardella et al. reference fails to suggest smoothing resistive paste and therefore fails to make up for the deficiencies of Huang et al.

The Examiner's rejection relies on the Huang et al. and Ciardella et al. references alone (with the Chabert et al. and Madeira references apparently being relied on only for the lack of motivation to combine the Huang et al. and Ciardella et al. references as will be discussed below). Since neither of the Huang et al. and Ciardella et al. references disclose smoothing a resistive paste, and especially do not disclose smoothing a resistive paste through add-on jetting, Applicants respectfully submit that the Examiner's rejections of independent claims 1, 19, 20, 39 and 41 are improper and should be withdrawn.

The Examiner appears to have taken the position that Chabert et al. and Madeira provide the motivation for modifying Huang et al. and Ciardella et al. by teaching that it is known to use touch up paint to correct defects in originally applied paint. Applicants respectfully submit the Examiner's position is unreasonable.

First, as alluded to above, neither of the Huang et al. and Ciardella et al. references suggest smoothing resistive paste. Therefore, even if the Chabert et al. and Madeira references provide sufficient motivation to combine, a fact which Applicants do not agree with, the rationale relied on by the Examiner, i.e. that the Ciardella et al. jetting device be used to smooth the screen printed resistive paste of Huang et al., is without basis. It should also be noted that neither of the Chabert et al. and Madeira references make up for this important deficiency of Huang et al. and Ciardella et al.

Second, the Chabert et al. and Madeira references are directed to non-analogous prior art. Huang et al. is directed to a multilayer electronic component that includes a resistor formed therein from a screen printed material and Ciardella et al. is directed to jetting device for mounting components to a circuit board. Chabert et al. and Madeira; however, are directed to painting devices. One having ordinary skill in the art would not look to painting devices in order to obtain a solution to a problem associated with electronic circuit boards. Referring to MPEP 2141.01(a), entitled "Analogous and Nonanalogous Art, TO RELY ON A REFERENCE UNDER 35 U.S.C. 103, IT MUST BE ANALOGOUS PRIOR ART," the following is stated:

The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."); * *Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993)>; and *State Contracting & Eng'g Corp. v. Condotte America, Inc.*, 346 F.3d 1057, 1069, 68 USPQ2d 1481, 1490 (Fed. Cir. 2003) (where the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved)<.

In view of the above, a reference must be either "in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned."

In the present case, the painting devices of Chabert et al. and Madeira are not "in the field of

applicant's endeavor," since the present invention (as well as Huang et al. and Ciardella et al.) are directed to mounting of components on a circuit board or forming a resistive layer of material in an electronic component. In addition, the painting devices of Chabert et al. and Madeira are certainly not "reasonably pertinent to the particular problem with which the inventor was concerned." In view of this, Applicants submit that the Chabert et al. and Madeira are directed to non-analogous prior art. Therefore, the Examiner's reliance on these references is improper.

Third, Applicants submit that the Chabert et al. and Madeira references do not teach what the Examiner asserts is taught by these references. The Examiner has taken the position that Madeira reference would be used to correct defects in the paint application of Chabert et al. However, Madeira discloses a touch-up paint dispenser with an integral rubbing compound dispenser in order to cover scratches in a finished product. In view of this, Madeira does not disclose the correction of defects in the original application of a painted surface, but only defects that occur after the first application has been completed, i.e. scratches formed in the finished surface after completion of the finished surface. In view of this, Applicants submit that the Chabert et al. and Madeira references fail to make up for the deficiencies of Huang et al. and Ciardella et al. for this additional reason.

In view of the above, Applicants submit that the Examiner's rejection in view of the Huang et al, Ciardella et al., Chabert et al. and Madeira references is improper and should be withdrawn.

With specific regard to independent claims 39 and 41 of the present invention, these claims recite add-on jetting of individual droplets of viscous medium one drop at a time and add-on jetting of solder paste on a previously screen printed substrate. Since the Huang et al., Ciardella et al.,

Chabert et al. and Madeira references fail to disclose add-on jetting, Applicants submit that claims 39 and 41 are allowable for the same reasons mentioned above.

With regard to the Examiner's rejection in view of the Skinner et al. reference, Applicants respectfully submit that the Examiner's rejection is improper for generally the same reasons mentioned above. Specifically, Huang et al. fails to disclose smoothing a screen printed substrate. Therefore, the Examiner's reliance on the Skinner et al. reference to smooth a screen printed substrate is improper. In other words, neither the Huang et al. or Skinner et al. references disclose smoothing a screen printed substrate. In view of this, the combination of references relied on by the Examiner is insufficient to arrive at the presently claimed invention.

With regard to the claims of the present application, independent claims 1, 19, 20, 39 and 40 recite "add-on jetting of predetermined additional amounts of viscous medium," "jetting additional viscous medium," "jetting additional viscous medium," "add-on jetting of individual droplets of viscous medium" and "add-on jetting of solder paste," respectively. In view of this, each of the independent claims requires that additional material be applied to the substrate after the substrate is screen printed. However, Skinner et al. is directed to ion bombardment, which is a process that removes portions of the insulating film in order to smooth the insulating film. In view of this, there is no material added to the insulating film in the method of Skinner et al. Since neither of the Huang et al. and Skinner et al. references disclose "add-on" jetting or the application of "additional" amounts of viscous medium, Applicants respectfully submit that the Skinner et al. reference fails to make up for the deficiencies of Huang et al.

It should also be noted that Skinner et al. is completely unrelated to the field of the present invention and Huang et al. Skinner et al. is directed to smoothing conductive films. This reference is completely silent with regard to smoothing a resistive paste, and especially a resistive paste applied by screen printing as in the Huang et al. reference. Referring to Figures 2 and 3 of Huang et al., the screen printed resistive paste is located at predetermined position at troughs 220 in order to connect adjacent input/output pads 216, 218. In view of this, the entire surface of the sheet material 204 is not covered by the resistive paste. In Skinner et al.; however, an entire surface of a substrate is covered with an insulating film. Since the entire surface of the substrate is covered with the insulating film, it is possible to use the ion bombardment to smooth the entire surface. However, since Huang et al. is directed to a screen printed substrate, the entire surface of the substrate is not entirely covered with the resistive paste. In view of this, it would not be possible to smooth the screen printed substrate with the ion bombardment of Skinner et al. Therefore, the Examiner's modification of Huang et al. would not result in an operable method.

In view of the above, Applicants submit that the Examiner's rejection of independent claims 1, 19, 20, 39 and 41 in view of the Huang et al. and Skinner et al. references is improper and should be withdrawn.

With regard to dependent claims 2-8, 31, 34, 37, 38 and 40, Applicants respectfully submit that these claims are allowable due to their respective dependence upon allowable independent claims 1 and 39, as well as due to the additional recitations in these claims.

With regard to the Examiner's reliance on the Itsuji reference, this reference fails to disclose add-on jetting being performed without masking or stenciling as recited in independent claims 1, 19

and 20 of the present invention and fails to disclose add-on jetting of individual droplets of viscous medium or add-on jetting of solder paste as respectively recited in independent claims 39 and 41 of the present invention. Accordingly, this reference fails to make up for the deficiencies of Huang et al., Ciardella et al., Chabert et al. and Madeira.

In view of the above remarks, Applicants respectfully submit that claims 1-8, 19, 20, 31, 34 and 37-41 clearly define the present invention over the references relied on by the Examiner. Accordingly, reconsideration and withdrawal of the Examiner's rejections under 35 U.S.C. § 103 are respectfully requested.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently pending rejections and that they be withdrawn.

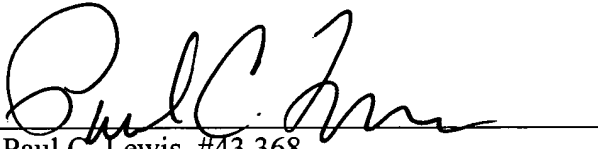
It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Paul C. Lewis, Registration No. 43,368 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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